DOI: 10.14260/jemds/2015/1984

ORIGINAL ARTICLE

OVARIAN CRESCENT SIGN IN PREOPERATIVE PREDICTION OF MALIGNANCY IN ADNEXAL MASSES

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HOW TO CITE THIS ARTICLE:
Jyoti Jaiswal, Avinashi Kujur, Anand Jaiswal, Sonali Route. "Ovarian Crescent Sign in Preoperative Prediction of Malignancy in Adnexal Masses". Journal of Evolution of Medical and Dental Sciences 2015; Vol. 4, Issue 80, October 05; Page: 13931-13936, DOI: 10.14260/jemds/2015/1984

ABSTRACT: AIM: To evaluate Ovarian Crescent sign for diagnosing the benign from malignant adnexal masses. **METHODS:** This was a prospective observational study including 50 women attending the Department of Obstetrics and Gynaecology, Pt. J. N. M. Medical College Raipur CG. All women underwent detailed Ultrasonographic examination and presence or absence of ovarian crescent sign was recorded. After appropriate surgical intervention diagnosis was confirmed by Histopathological report. The Ultrasonographic data of ovarian crescent sign was compared with that of the Histopathological reports. **RESULTS:** Out of 50 adnexal masses 30 were benign and 20 found to be malignant. Ovarian crescent sign was absent in all 20 malignant cases giving negative predictive value of 100%. Out of 30 benign masses ovarian crescent sign was recorded in 28 cases. The sensitivity of ovarian crescent sign is of 93.3%, specificity 100%, PPV90.9% and accuracy of 96% that is found to be highly significant. **CONCLUSION:** The Ovarian crescent sign with 100 % NPV and specificity is a simple and effective diagnostic tool in predicting the malignant potential of adnexal masses.

KEYWORDS: Ovarian crescent sign, predictive value, Adnexal mass.

INTRODUCTION: Adnexal masses are frequently found in both symptomatic and asymptomatic women throughout her life time. In premenopausal women, physiological cysts and corpus luteum cysts are the most common adnexal masses. Other masses in this age include endometrioma, polycystic ovaries, tubo-ovarian abscesses and benign neoplasms. In post-menopausal women, both primary and secondary neoplasms must be considered along with fibroids and ovarian fibromas. Information from the history, physical examination, ultrasound evaluation and laboratory tests will enable to determine the nature of adnexal mass.

Despite recent advances in ultrasound imaging, the differential diagnosis between benign and malignant adnexal tumors remain difficult. Early studies on the assessment of ovarian morphology using ultrasonography shows that` papillary proliferation, septation and solid areas within the cyst increases the probability of ovarian malignancy. Many of these features are also present in benign tumor, which decreases their diagnostic value. In order to improve the accuracy of ultrasonographic diagnosis a number of morphological scoring system are designed which encourage a systematic examination of number of different tumor features on ultrasonographic scan.[1,2] However none of these scoring system has been widely adapted. In routine clinical practice, Doppler and serum tumor markers like CA125 help in improving the diagnostic accuracy in characterization of adnexal tumors. But in isolation none of the new parameters discriminated between benign and malignant tumor.

The value of detection of rim of normal ovarian tissue in the ipsilateral adnexal masses adjacent to it i.e the Ovarian Crescent Sign (OCS), is a single USG parameter in prejudging the nature of the adnexal mass as benign or malignant. This appears simple, immediate and comparable to other

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methods. It does not involve any calculation or multiple parameters. Absence of OCS is a more sensitive indicator of malignant nature than the use of malignancy indices.

METHOD AND MATERIAL: Our study was prospective observational study, from 1st January 2014 to31st December 2014. A total of 50 women with ovarian mass attending outdoor clinic of Department of Obstetrics and Gynaecology, Pt. J. N. M. Medical College, Raipur, Chhattisgarh after taking informed consent were included in the study. Pre diagnosed cases, infective tubo-ovarian complex, tubercular abscesses, ectopic pregnancy were excluded from the study. Socio-demographic parameters were recorded detailed USG examination recording consistency, volume, surface and findings regarding ovarian cresent sign i.e. Detection of rim of normal hypoechogenic ovarian tissue with or without ovarian follicles located within the capsule, adjacent to the adnexal mass which could not be separated from wall by applying moderate amount of pressure. Appropriate operative interventions done. Post-operative histopathological reports were analyzed with reference to presence or absence of ovarian crescent sign. Data was analyzed by using SPSS 20.

AIMS AND OBJECTIVES: To evaluate whether the presence of normal ovarian tissue adjacent to an adnexal masses (Ovarian crescent sign) could assist in preoperative determination of benign or malignant nature of adnexal mass.

RESULTS: When cases were distributed according to age, it was observed that maximum no of cases i.e.14 out of 50(28%) belonged to 16-20 years of age group, followed by 7 out of 15(14%) belonging to 21-25 years of age group (Table 1). 28% of cases were noted in 16-20yrs age group but only 21% were malignant. While in 55-60yrs age group out of 12% cases seen 83.33% were malignant ($p<0.0001$).

Parity of women considered in this study were ranging from nulliparous to 5th parity. The maximum cases were nulliparous i.e.48% ($p <0.0001$).

On the basis of consistency, adnexal masses were classified as cystic, solid, and solid cystic. Most of cases were cystic i.e 24 cases 48%, followed by solid 30% of cases and 22% cases were solid cystic. It was observed that out of 24 cystic masses, 21cases were benign and 3 were malignant. All the solid masses were malignant in nature ($p<0.001$) that was highly significant. Out of 11 solid cystic masses 6 were benign and 5 were malignant. (Figure2)

The surface of all the masses were examined and were classified as smooth and irregular. 28 cases (56%) were having smooth surface and 11 cases (44%) had irregular surface. Out of 28 smooth surfaced masses 92.85% were benign whereas 68.18% irregular surfaced masses were benign ($p<0.0001$).

Out of all benign masses on histopathological diagnosis 53% were simple follicular cyst, 36%were chocolate cyst, 6%were dermoid cyst and 3% were serous-cystadenoma. And out of all malignant masses 65% were serous cystadenocarcinoma and 35% were dysgerminoma.

The ovarian crescent sign was present in 93% of benign adnexal mass while ovarian crescent sign was absent in all the malignant masses. In our study we found the sensitivity of ovarian crescent sign of 93.3%, specificity100%, NPV100%, PPV90.9% and accuracy of 96% that is highly significant. (Table2)

DISCUSSION: Ovarian cancer is seventh most common malignancy.[3] It has the highest fatality ratio of gynaecological malignancies. It remains asymptomatic and about three fourth of cases are diagnosed in advanced stage with metastasis.[4] Prediction of malignant potential in adnexal mass preoperatively is very important. Women's survival rate and quality of life depend on the fact that disease is diagnosed in early stage. Advanced stage respond well if optimal de bulking was done by Gynaecooncologist.[5,6]

Thus present study was undertaken to evaluate malignant potential of adnexal masses.

The mean age of the women in the study was 41+_ 10 years (range 15 to 60 years) with maximum of cases in 16 to 20 years age group. This is in accordance to Farooq F study.[7]

In present study; out of all benign masses 53% were simple follicular cyst and out of all malignant masses 65% were serous cystadenocarcinoma and 35% were dysgerminoma. It was similarly reported by Farooq et al.

The ovarian crescent sign was seen in 28 out of 30 patients with benign pathology. It was absent in one woman with Teratoma and another case of Endometrioma. However, one study stated that ovarian crescent sign is always easily detectable in Endometriotic cysts.[8]

In all malignant cases the crescent sign was absent. It was in accordance with other studies that reported 100% negative predictive value of ovarian crescent sign.[9,10] Other Indian study reported 97.4% negative predictive value for OCS.[11]

In our study we found the sensitivity of ovarian crescent sign of 93.3%, specificity 100%, NPV100%, PPV90.9% and accuracy of 96% that is highly significant (Table 2). This was supported by Yazbek et al,[10] Neda et al,[12] Hillby et al,[13] Kashtagi et al.[14] They even compared the ovarian crescent sign with that of ROMA, RMI Index and found to be comparable with sensitivity and specificity of these tests.

CONCLUSION: The presence of Ovarian Crescent sign is a simple and useful morphological variable assisting in evaluation of adnexal mass regarding malignant potential. Its incorporation in routine Gynecological practice will enable the further data availability and its validation as an effective tool.

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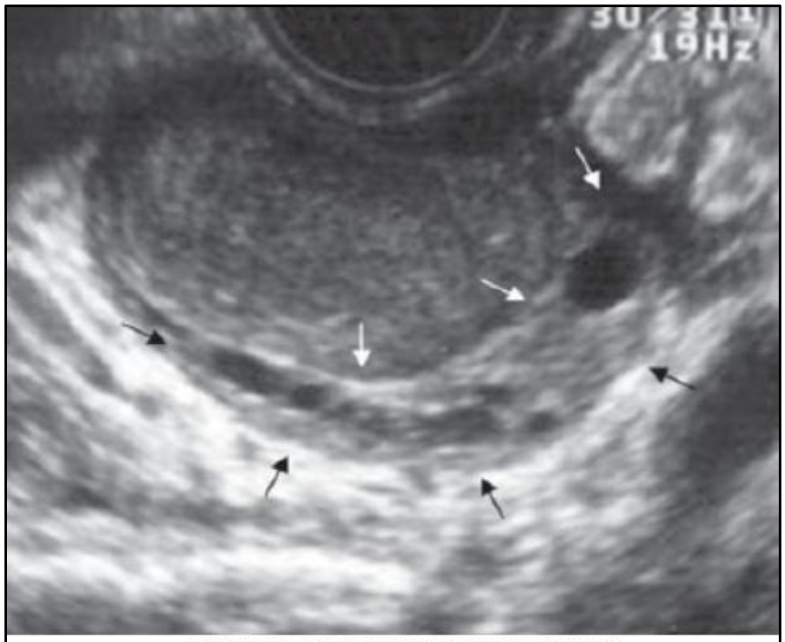

FIGURE 1: ULTRASONOGRAPHIC IMAGE SHOWING OVARIAN CRESCENT SIGN

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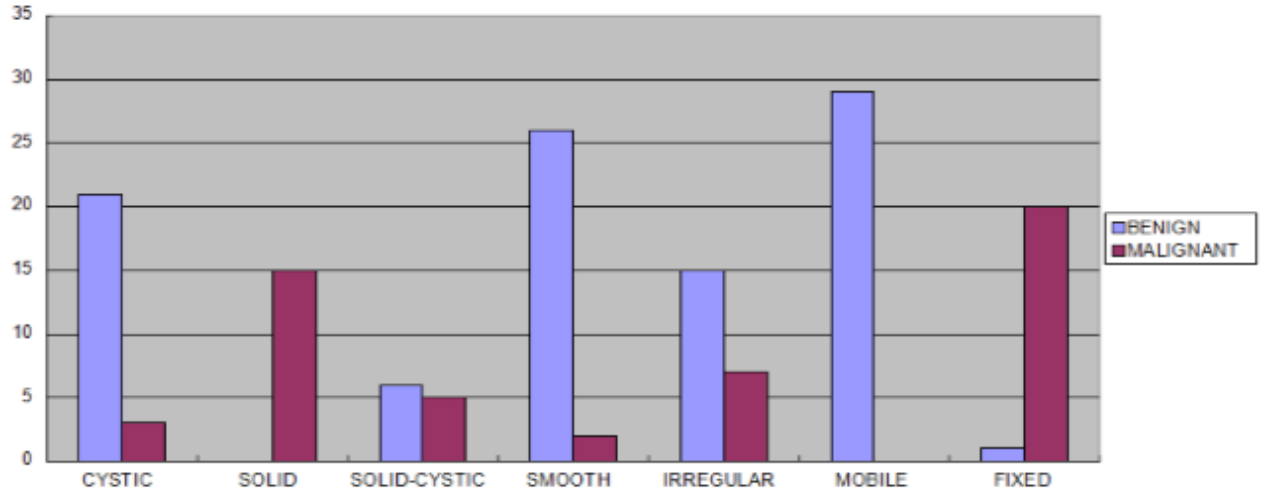

FIGURE 2: DISRTIBUTION OF CASES ACCORDING TO VARIABLES

Sl. No.	AGE (Yrs)	BENIGN/ MALIGNANT	HISTOLOGICAL DIGNOSIS	OVARIAN CRESCENT SIGN
1.)	15-Oct	BENIGN(N=1)	Simple follicular cyst (1)	Present
	N=1			
2.)	16-20	BENIGN(N=11)	Dermoid cyst (1)	Present
	N=14		Simple follicular cyst (4)	Present
			Chocolate cyst (5)	Present
			Serous cystadenoma (1)	Present
		MALIGNANT(N=3)	Teratoma (3)	Absent
3.)	21-25	BENIGN(N=5)	Simple follicular cyst (2)	Present
	N=7		Chocolate cyst (3)	Present
		MALIGNANT(N=2)	Teratoma (2)	Absent
4.)	26-30	BENIGN(N=3)	Simple cyst (2)	Present
	N=5		Dermoid cyst (1)	Absent
		MALIGNANT(N=2)	Teratoma (2)	Absent
5.)	31-35	BENIGN(N=3)	Simple cyst (3)	Present
	N=4			
		MALIGNANT(N=1)	Simple cystadenocarcinoma (1)	Absent
6.)	36-40	BENIGN(N=2)	Simple follicular cyst (1)	Present
	N=3		Chocolate cyst (1)	Absent
		MALIGNANT(N=1)	Simple cystadenocarcinoma (1)	Absent
7.)	41-45	BENIGN(N=2)	Chocolate cyst (2)	Present
	N=4			
		MALIGNANT(N=2)	Simple cystadenocarcinoma (2)	Absent
8.)	46-50	MALIGNANT(N=1)	Simple cystadenocarcinoma (1)	Absent

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	N=1			
9.)	51-55	BENIGN(N=2)	Simple follicular cyst (2)	
	N=5			
		MALIGNANT(N=3)	Simple cystadenocarcinoma (3)	Absent
			Simple cystadenocarcinoma (3)	Absent
10.)	55-60	BENIGN(N=1)	Simple follicular cyst (1)	Present
	N=6			
		MALIGNANT(N=5)	Simple cystadenocarcinoma (5)	Absent

Table 1: Distribution of cases according to age, nature, histological diagnosis and ovarian crescent sign

Ovarian Crescent sign	Benign Mass	Malignant Mass	Total
Present	28	0	28
Absent	2	20	22
Total	30	20	50

Table 2: Ovarian crescent sign and the nature of the adnexal mass (n=50)

Sensitivity 93.3%, Specificity 100%, NPV 100%, PPV 90.9%, Accuracy 96%, P value <0.001

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FINANCIAL OR OTHER COMPETING INTERESTS: None

Date of Submission: 22/09/2015.
Date of Peer Review: 23/09/2015.
Date of Acceptance: 24/09/2015.
Date of Publishing: 03/10/2015.